

Serial No.: 09/767,390

Docket No.: JCLA6877

**REMARKS****Present Status of the Application**

The Office Action rejected all presently-pending claims 1-8. Specifically, the Office Action rejected claims 1-3 and 6 under 35 U.S.C. 102(b), as being anticipated by Nagae et al. (U.S. Patent No. 5,995,190). In addition, the Office Action rejected claims 7 and 8 under 35 U.S.C. 102(b), as being anticipated by Tomita et al. (U.S. Patent No. 5,926,246). Applicants have amended claims 1 and 7 to improve clarity. Claims 1-8 remain pending in the present application, and reconsideration of those claims is respectfully requested.

**Summary of Applicant's Invention**

The Applicant's invention is directed to a pixel structure for a liquid crystal display has a first substrate with respect to a pixel region. A W-like extruding structure composed of two V-like is formed on a surface of the substrate. A second substrate with several openings is also provided in parallel to the first substrate. The openings of the second substrate are aligned along a direction from a tip of the V-like to an edge of the pixel. Moreover, a liquid crystal layer is located between the first substrate and a second substrate, wherein the extruding structure abuts the liquid crystal layer.

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**Discussion of Office Action Rejections**

Applicants have amended claims 1 and 7, as required by Office Action.

The Office Action rejected claims 1-3 and 6 under 35 U.S.C. 102(b), as being anticipated by Nagae et al.. In addition, the Office Action rejected claims 7 and 8 under 35 U.S.C. 102(b), as being anticipated by Tomita et al.. The Office Action also states rejections in "*Response to Arguments*". Applicants respectfully traverse the rejection for at least the reason set forth below.

First, the term of vertical alignment (VA) in MVA, as well known by the skilled artisans, means that the LC molecules have the alignment vertical to the substrate when it is at off. However, the LC molecules in the VA design are globally twisted without producing domain. Then, the multi-domain VA (MVA) design is proposed. In order to produce the multi-domain, the conventional structure, as shown in FIGs. 1A-1B (AAPA), has the protruding structure 58 in one substrate and the slit 60 in another substrate, so as to produce multiple domains. Applicants have also submitted a published paper: "*A new design .....MVA TFT-LCD Panels*" by Tanaka et al. for reference about MVA. Even though the concept of MVA has been proposed, how to produce multiple domains in better quality without causing i.e. light leakage and improve the view angle is the design issue.

However, the conventional structure as shown in FIG. 1A in top view, the pattern is a line structure. In FIG. 1B, the cross-sectional view shows the multiple domains.

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The present invention (FIG. 2) proposes i.e. the W-like protruding structure 62 associating the holes 64. The boundary width of domain and the color shift can at least be reduced.

In FIG. 2, the first substrate 52, the second substrate 56 and the LC layer 54 are overlapping. However, as can be understood, the cross-sectional view (not shown) will be like the FIG. 1B, but the different substrate structure with the protruding structure 62 and the holes 64.

Therefore, even though the LC molecules 68 may be parallel to the substrate, but the twist directions, due to the W-like protruding structure with the holes, are not uniform, and multiple domains are then produced in better quality.

Now turning to the rejections, as discussed in the previous response, in re Nagae et al., Figs. 8A-8B are in cross-sectional views (col. 6, line 65 – col. 7, line 3). The two substrates have the conical shaped concave portion (col. 14, lines 42-44; col. 15, lines 4-8). Fig. 8 discloses the similar structures of the two substrates but with a shift (col. 15, lines 30-34). Therefore, the structures in Figs. 8A-8B do not disclose the structure from the top view. Furthermore, according to the conical shaped concave portion, it can be understood that the substrate should have multiple circle portions in the conical shaped structure from the top view. This does not disclose the W-like structure on the substrate (from i.e. top view but not from side view).

Furthermore, Nagae et al. failed to disclose the aligned openings in the second substrate as recited in claims 1 and 7.

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Therefore, Nagae et al. failed to disclose all of the features recited in independent claim 1 or 7 as well as in dependent claims 2 and 8.

In re Tomita et al., with the similar reason to the Nagae et al. fail to disclose the extruding structure on the first substrate and multiple aligned openings on the second substrate. In Fig. 8A of Tomita et al, even though the alignment layer 14 has several concave strips, so as to align the LC molecules. The surface of the alignment layer 14 clearly has no W-like extruding structure from the top view. *A top view of the alignment layer 14 should appear as the multiple strips.*

Also and, Tomita et al. failed to disclose the aligned openings in the second substrate.

Therefore, Tomita et al. failed to disclose all of the features recited in independent claim 7 or 8 as well as in dependent claims 2 and 8.

*Nagae et al.* and *Tomita et al.* at least failed to disclose the structure of the present invention to produce the multiple domains.

For at least the foregoing reasons, Applicant respectfully submits that independent claims 1 and 7 patently define over the prior art references, and should be allowed. For at least the same reasons, dependent claims 2-6 and 8 patently define over the prior art references as well.

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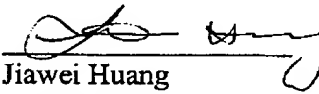
**CONCLUSION**

For at least the foregoing reasons, it is believed that all pending claims 1-8 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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